



EPA Region 7 TMDL Review

TMDL ID 372 **Water Body ID** RE1-10000, RE1-20000,
RE2-10000, RE3-10000,
RE3-20300

Water Body Name Republican River Basin and Frenchman Creek- 5 TMDLs

Pollutant Fecal Coliform and E. coli Bacteria

Tributary Elm Creek, Thompson Creek, Prairie Dog Creek, Muddy Creek, Medicine
Creek, Red Willow Creek, and Arikaree River

State NE **HUC** 10250001

Basin Republican River Basin

Submittal Date 2/22/2005

Approved 03/18/05

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Letter dated February 18, 2005, was received by EPA February 22, 2005, formally submitting this TMDL for approval under Section 303(d).

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Nebraska WQS for Primary Contact Recreation states "Bacteria of the Fecal coliform group shall not exceed a geometric mean of 200/100 ml, nor exceed 400/100 ml, in more than 10% of the samples. Nebraska WQS states " E. coli bacteria shall not exceed a geometric mean of 126/100 ml. These criteria are based upon a minimum of 5 samples taken within a 30-day period. This does not preclude limitations based on effluent guidelines. These criteria apply during the recreational period of May 1 through September 30." WQS should be achieved based on the reductions listed: RE1-10000,

111/100 ml a 36% reduction, RE1-20000, 110/100 ml a 70 % reduction, RE2-10000(1), 110/100 ml a 75% reduction, RE2-10000(2), 113/100 ml a 26% reduction, RE3-10000, 110/100 ml a 58% reduction, and RE3-20300), 111/100 ml an 80% reduction.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The WQS are described, including all beneficial uses and numeric criteria. The TMDL target is based on the numeric water quality criteria for E. coli bacteria.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The TMDL target is based on the numeric water quality criteria for E. coli bacteria.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

Point sources are identified as contributing to the E. coli impairment within all three of the main stem segments; municipal stormwater discharges, unpermitted sanitary or industrial discharges, and failing individual treatment systems are also acknowledged. Maps showing NPDES permitted facilities, animal feeding operations and industrial facilities are provided.

Nonpoint sources include failing on-site wastewater systems, run-off from livestock pastures, improper or over-application of biosolids (wastewater treatment facility sludge), septage or manure and urban stormwater not regulated by NPDES permits. Natural sources are also considered from wildlife contributions.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

The TMDL recognizes allocations are dynamic and can vary with stream flow. The method used to account for the variation in flow is based upon load duration curves. For these TMDLs, the source loading is based upon the position of the monitoring data points in relation to the boundary established on the load duration curves. The demarcation on the load curves between point source and nonpoint sources is the greater of the 7q10 low flow

or the stream flow volume necessary to dilute the point source effluents to compliance with the water quality criteria. The points plotted above the acceptable loading indicate a deviance from the water quality criteria.

WLA Comment

Waste load allocations (WLAs) for NPDES permitted facilities, which discharge directly to a recreational segment, will be a monthly geometric mean of 126/100 ml. The water quality criteria are applied to the "end-of-pipe" concentrations and are applicable at all stream flows $>7q_{10}$. Dry weather discharges will be a monthly geometric mean of 126/100 ml. Non-discharging facilities are provided a WLA of zero.

LA Comment

Load allocations are based upon stream flow volume and the geometric mean for E. coli. Load allocations are identified as follows: RE1-10000, 111/100 ml a 36% reduction, RE1-20000, 110/100 ml a 70% reduction, RE2-10000(1), 110/100 ml a 75% reduction, RE2-10000(2), 113/100 ml a 26% reduction, RE3-10000, 110/100 ml a 58% reduction, and RE3-20300, 111/100 ml an 80% reduction.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The TMDLs contain an implicit and explicit margin of safety. Specifically decay or die-off of E. coli was not included in the pollutant source evaluation, and the assumption that all point sources are discharging the permitted concentrations allowed, when in fact, many of the plants provide disinfection that is sufficient to achieve 100% reduction in the indicator bacteria of 0/100ml. Additionally, the targeted reduction will focus on achieving 90% of the water quality target ($<113/100$ ml).

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

Water quality criteria are only applicable during the Title 117 defined recreation season that starts May 1 and ends September 30. Because of this, the water quality and stream volume data was limited to this time period.

Public Participation

Submittal describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

The availability of these TMDLs in draft form were published in the Franklin County Chronicle, Harlan County Journal, and the Superior Express with the public comment period running from December 22, 2004, to February 1, 2005. The draft TMDLs were also available to the public for review on NDEQ's website during the public notice period and

announcement letters were mailed to interested stakeholders. No comment letters were received.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Future monitoring will be consistent with Nebraska's rotating basin monitoring scheme; the next targeted monitoring phase for the basin is 2007. An effort is to be made in expanding the monitoring. Compliance monitoring and self-monitoring information from NPDES permittees will be used in assessing the success of these TMDLs as well. Microbial source tracking may be used in the future as this science progresses to be more user friendly.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

Although reasonable assurances are not required for this TMDL, Nebraska has identified several Federal, State, local, and non-government organizations that may be included in the implementation process, as well as enforcement and compliance measures as needed for NPDES permits.
